

AMENDMENTS TO THE CLAIMS

1. (Currently amended) A substrate processing apparatus ~~having~~ comprising:
_____ a processing chamber which accommodates a substrate or substrates therein, and
_____ a heating member which heats said substrate or substrates, ~~in which at least two~~
~~gases which react with each other are alternately supplied into said processing chamber to~~
~~form a desired film or films on a surface or surfaces of said substrate or substrates,~~
~~characterized by comprising:~~

a controller for supplying a first gas to the process chamber through a first supply
tube and, alternately, for supplying a second gas to the process chamber through a second
supply tube independent of the first tube,

~~two supply tubes through which said two gases respectively flow independently~~
~~from each other;~~ and

a single gas supply member which supplies said first and second gases into said
processing chamber and which has a portion extending to a region whose temperature is
equal to or higher than a decomposition temperature of at least one of said two gases,
wherein

said ~~two~~ first and second supply tubes are connected to said gas supply member at a
location whose temperature is lower than the decomposition temperature of said ~~at least~~
~~one~~ first gas or said second gas, and said ~~two~~ first and second gases are supplied into said
processing chamber through said gas supply member.

2. (Currently amended) A substrate processing apparatus as recited in claim 1,
~~characterized in that~~ wherein

said gas supply member is a nozzle having a ~~large number~~ plurality of gas injection
openings.

3. (Currently amended) A substrate processing apparatus as recited in claim 2,
~~characterized by~~ further comprising:

a reaction tube which forms said processing chamber and which can accommodate a plurality of stacked substrates therein, wherein

said nozzle extends from a lower portion to an upper portion of said reaction tube along a direction in which said substrates are stacked.

4. (Currently amended) ~~A substrate processing apparatus as recited in claim 1, characterized in that~~ A substrate processing apparatus having a processing chamber which accommodates a substrate or substrates therein, and a heating member which heats said substrate or substrates, in which at least two gases which react with each other are alternately supplied into said processing chamber to form a desired film or films on a surface or surfaces of said substrate or substrates, comprising:

two supply tubes through which said two gases respectively flow independently from each other; and

a single gas supply member which supplies said gases into said processing chamber and which has a portion extending to a region whose temperature is equal to or higher than a decomposition temperature of at least one of said two gases, wherein

said two supply tubes are connected to said gas supply member at a location whose temperature is lower than the decomposition temperature of said at least one gas, and said two gases are supplied into said processing chamber through said gas supply member, wherein said two supply tubes and said gas supply member are connected to each other in said processing chamber.

5. (Currently amended) A substrate processing apparatus as recited in claim 1, ~~characterized in that~~ including

a film produced by reaction of said ~~at least two~~ first and second gases is adhered to an inner wall of said gas supply member.

6. (Currently amended) A substrate processing apparatus as recited in claim 5, ~~characterized in that~~ wherein said controller supplies a

cleaning gas ~~is supplied~~ into said processing chamber through said gas supply member to carry out a cleaning operation of said processing chamber and a removing operation of said film adhered to said gas supply member.

7. (Currently amended) A substrate processing apparatus as recited in claim 1, ~~characterized in that wherein~~

~~said gases are~~ one of said first gas and said second gas is trimethyl aluminum and the other of said first gas and second gas is ozone, and an aluminum oxide film or films are formed on a surface or surfaces of said substrate or substrates.

8. (Currently amended) A substrate processing apparatus as recited in claim 1, ~~characterized in that wherein~~

~~said gases are~~ one of said first gas and said second gas is tetrakis (N-ethyl-N-methyl amino) hafnium and the other of said first gas and said second gas is ozone, and a hafnium oxide film or films are formed on a surface or surfaces of said substrate or substrates.

9. (Currently amended) A substrate processing apparatus comprising
_____ a hot wall type processing furnace which includes a processing chamber which accommodates a substrate or substrates ~~therein and therein,~~

_____ a heating member which is disposed outside of said processing chamber and which heats said substrate or substrates, ~~wherein at least two gases which react with each other are alternately supplied into said processing chamber to produce a desired film or films on a surface or surfaces of said substrate or substrates, characterized by comprising:~~

a controller for supplying a first gas to the process chamber through a first supply tube and, alternately, for supplying a second gas to the process chamber through a second supply tube independent of the first tube,

~~two supply tubes through which said two gases respectively flow independently from each other; and~~

a single gas supply member which supplies said first and second gases into said processing chamber, and which has a portion disposed inside of said heating member, wherein

said ~~two~~ first and second supply tubes are connected to said gas supply member in a region whose temperature is lower than a temperature in said processing chamber in the vicinity of said substrate or substrates, and said ~~two~~ first and second gases are supplied into said processing chamber through said gas supply member.

10. (Currently amended) A semiconductor device producing method ~~characterized in that~~ using a substrate processing apparatus having a processing chamber which accommodates a substrate or substrates therein, ~~and a heating member which heats said substrate or substrates, in which at least two gases which react with each other are alternately supplied into said processing chamber to form a desired film or films on a surface or surfaces of said substrate or substrates, comprising:~~

two supply tubes through which ~~said two~~ gases respectively flow independently from each other; and

a single gas supply member which supplies ~~said gases~~ from the supply tubes into said processing chamber and which has a portion extending to a region whose temperature is equal to or higher than a decomposition temperature of at least one of said two gases, ~~wherein~~

said two supply tubes ~~are~~ being connected to said gas supply member at a location whose temperature is lower than the decomposition temperature of said at least one gas, ~~and said two gases are supplied into said processing chamber through said gas supply member,~~

~~said two gases are alternately supplied into said processing chamber through said gas supply member to form said desired film or films on said surface or surfaces of said substrate or substrates~~

the method comprising the steps of:

supplying a first one of said two gases to the single gas supply member through a first one of said two supply tubes for a first period of time to form a film on said substrate or substrates; and

after said first period of time, supplying a second one of said two gases to the single gas supply member through a second one of said two supply tubes for a second period of time to form a film on said substrate or substrates.